

CLAIMS

1. A motor and gearbox unit (1) in particular for a motor vehicle windshield wiper mechanism, said motor and gearbox unit comprising a support casing (2) on which an electric motor (3) coupled to a gearbox (4) is mounted, a closure casing (5) covering the support casing (2), and connection means (20) electrically interconnecting the various electrical components of the motor and gearbox unit (1), said motor and gearbox unit being characterized in that the connection means (20) comprise at least one conductor track (23, 24) which is overmolded inside the closure casing (5), and which is provided with at least one notch (25, 26) suitable for co-operating by interfitting with a connection plug (21, 22) of one of the electrical components of the motor and gearbox unit (1), the track portions (27a, 27b, 28a, 28b) longitudinally defining each notch (25, 26) being suitable for exerting contact pressure by elastic deformation onto respective faces of the associated connection plug (21, 22).
2. A motor and gearbox unit (1) according to claim 1, characterized in that the minimum width of each notch (25, 26) is significantly less than the thickness of the associated connection plug (21, 22).
3. A motor and gearbox unit (1) according to claim 1 or claim 2, characterized in that each notch (25, 26) is provided through the conductor track (23, 24) in a manner substantially perpendicular to the faces of said track, and is provided with a "side" opening (29, 30) that opens out in the side wall of said conductor track (23, 24).

4. A motor and gearbox unit (1) according to any one of claims 1 to 3, characterized in that each notch (25, 26) is provided longitudinally at one end of the conductor track (23, 24), and in that its side opening (29, 30) opens out in the portion that is further or distal from said track end.

5. A motor and gearbox unit (1) according to any one of claims 1 to 4, characterized in that the wall defining each notch (25, 26) has at least one convex portion (31, 32) suitable for co-operating by contact with the associated connection plug (21, 22).

6. A motor and gearbox unit (1) according to any one of claims 1 to 5, characterized in that the wall portion that defines the end wall (33, 34) of the notch (25, 26) has a profile that is rounded, and preferably that is substantially circular.

7. A motor and gearbox unit (1) according to any one of claims 1 to 6, characterized in that each wall portion defining the side opening (29, 30) inside a notch (25, 26) is provided with a bevel (35a, 35b, 36a, 36b) suitable for facilitating insertion of the associated connection plug (21, 22).

8. A motor and gearbox unit (1) according to any one of claims 1 to 7, characterized in that it further comprises guide means (40) suitable for guiding the engagement of each connection plug (21, 22) into the corresponding notch (25, 26) of the associated conductor track (23, 24).

9. A motor and gearbox unit (1) according to claim 8, characterized in that the guide means (40) for guiding any one connection plug (21, 22) comprise two projecting elements (41, 42) which are integral with or
5 secured to the closure casing (5) and each of which is suitable for co-operating by sliding with an edge of a respective face of the connection plug (21, 22), simultaneously with said connection plug (21, 22) being engaged axially into the corresponding notch (25, 26)
10 in the associated conductor track (23, 24).

10. A motor and gearbox unit (1) according to claim 9, characterized in that the two guide elements (41, 42) for guiding any one connection plug (21, 22) are
15 positioned facing each other, at a distance corresponding substantially to the thickness of said connection plug (21, 22), and in the vicinity of the corresponding notch (25, 26) in the associated conductor track (23, 24), the space between said guide
20 elements (41, 42) extending facing said notch (25, 26).

11. A motor and gearbox unit (1) according to claim 9 or claim 10, characterized in that each guide element (41, 42) for guiding any one connection plug (21, 22)
25 is provided in its distal portion with a bevel (43, 44) which is formed facing the other guide element (41, 42) and which is suitable for guiding insertion of an edge of the connection plug (21, 22) between said guide elements (41, 42), simultaneously with the axial
30 engagement of said connection plug (21, 22) in the corresponding notch (25, 26) in the associated conductor track (23, 24).

12. A motor and gearbox unit (1) according to any one of claims 1 to 11, characterized in that it further comprises positioning means (50) suitable for positioning each notch (25, 26) of a conductor track (23, 24) facing the corresponding connection plug (21, 22) prior to them being engaged in each other.

13. A motor and gearbox unit (1) according to claim 12, characterized in that the positioning means (50) comprise at least one projecting element (51, 52) which is integral with or secured to the closure casing (5), and which is suitable for co-operating by interfitting with a slot (53, 54) of substantially complementary shape that is provided in one of the other component elements of the motor and gearbox unit (1).

14. A motor and gearbox unit (1) according to claim 13, characterized in that each positioning element (51, 52) is provided with at least one bevel (55, 56) which is formed in its distal end, and which is suitable for facilitating insertion of it into the corresponding slot (53, 54).

15. A motor and gearbox unit (1) according to any one of claims 1 to 14, characterized in that it further comprises abutment means (60) suitable for blocking insertion of each connection plug (21, 22) into the corresponding notch (25, 26) of the associated conductor track (23, 24), when the distal end of said connection plug (21, 22) reaches the vicinity of the end-wall (33, 34) of said notch (25, 26).

16. A motor and gearbox unit (1) according to claim 15, characterized in that the abutment means (60)

comprise at least one projecting stud (61) that is integral with or secured to the closure casing (5), and that is suitable for co-operating by blocking contact with one of the other component elements of the motor and gearbox unit (1).

17. A motor and gearbox unit (1) according to any one of claims 1 to 16 characterized in that it further comprises insulation means (70) suitable for electrically insulating each connection constituted by engagement of a connection plug (21, 22) into a notch (25, 26) in a conductor track (23, 24) relative to the other conductive elements of the motor and gearbox unit (1).

18. A motor and gearbox unit (1) according to claim 17, characterized in that the insulation means (70) comprise at least one electrically insulating wall (71, 72, 73) which is integral with or secured to the closure casing (5), and which forms a continuous screen around at least one portion of conductor track (23, 24) that is provided with a notch (25, 26).

19. A motor and gearbox unit (1) according to claim 17 or claim 18, characterized in that the insulation means (70) are also suitable for protecting the structural integrity of each portion of conductor track (23, 24) that is provided with a notch (25, 26).

20. A motor and gearbox unit (1) according to any one of claims 1 to 19, characterized in that the electric motor (3) is provided with two connection plugs (21, 22) forming power supply terminals, and in that the connection means (20) comprise two conductor tracks

(23, 24) which are overmolded in the closure casing (5) and each of which is provided with a notch (25, 26) suitable for co-operating by interfitting with one of said connection plugs (21, 22).

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21. A motor and gearbox unit (1) according to any one of claims 8 to 20, characterized in that the guide means (40) comprise two guide elements (41, 42) which are positioned between the two conductor tracks (23, 24), and which are suitable for simultaneously guiding the engagements of the two connection plugs (21, 22) of the electric motor (3) into the notches (25, 26) in said tracks (23, 24) that are associated respectively with them.

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22. A motor and gearbox unit (1) according to any one of claims 12 to 21, characterized in that the positioning means (50) comprise two positioning elements (51, 52) which are suitable for co-operating by interfitting with respective ones of two slots (53, 54) of substantially complementary shapes that are provided through the housing (19) of the electric motor (3).

23. A motor and gearbox unit (1) according to any one of claims 15 to 22, characterized in that the abutment means (60) comprise a stud (61) that projects between the two positioning elements (51, 52) and that is suitable for co-operating by blocking contact with that zone of the housing (19) of the electric motor (3) which is situated between the two slots (53, 54) serving to receive said positioning elements (51, 52).

24. A motor and gearbox unit (1) according to any one of claims 1 to 23, characterized in that the closure

casing (5) is made of an electrically insulating material.

25. A windshield wiper device, characterized in that
5 it includes at least one motor and gearbox unit (1)
according to any preceding claim.

26. A motor vehicle, characterized in that it includes
at least one motor and gearbox unit (1) according to
10 any one of claims 1 to 24.